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numbers which have the form $a^m + 1$, in which m is a power of 2, are prime numbers. He declared himself unable to give a demonstration, but he was nevertheless convinced of the truth of his assertion. The latter is correct for all numbers not exceeding five figures; for instance, $2^2+1, 2^4+1, 2^8+1, 2^{16}+1$ ($= 5, 17, 257, 65537$). But $2^{32}+1=4294967297$ is no longer a prime, for, as *Euler* has proved, it is divisible by 641.

[This Query was also answered in the affirmative by G. W. Hill, Prof. Chase, Judge Scott, E. S. Farrow, O. D. Oathout, E. B. Seitz and Henry Gunder.]

SOLUTION OF MR. HOLBROOK'S PROBLEM, (P. 72) BY PROF. H. T. EDDY.

Suppose the surface to be generated by the line

$$\frac{x-x_1}{x_2-x_1}=\frac{y-y_1}{y_2-y_1}=\frac{z-z_1}{z_2-z_1}. \ldots\ldots\ldots \tag{a}$$

Let the surface have a distance of $2r$ along the axis of x for its edge and the ellipse

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1, \qquad z=c, \ldots\ldots\ldots \tag{b}$$

for its base, and the axis of z for its conical axis. Then if the point (x_1, y_1, z_1) is situated on the axis of x and (x_2, y_2, z_2) upon the ellipse the problem evidently requires $x_1 : r :: x_2 : a$. $\therefore x_2 = \frac{ax_1}{r}$. . . . . (c)

Also $\quad y_1 = 0, \qquad z_1 = 0, \qquad z_2 = c, \qquad$ and from (*b*),

$$y_2 = \frac{b}{a}\sqrt{a^2-x_2^2}. \quad \therefore \text{ from } (c),\ y_2 = \frac{b}{r}\sqrt{a^2-x_1^2}.$$

∴ from (*a*),

$$\frac{r(x-x_1)}{x_1(a-r)}=\frac{ry}{b\sqrt{(a^2-x_1^2)}}=\frac{z}{c}. \ldots\ldots\ldots \tag{d}$$

∴

$$x_1=\frac{x}{\frac{z}{c}\left(\frac{a}{r}-1\right)+1}.$$

Substitute this value of x_1 in the last of equations (*d*) and we get

$$\frac{y}{b}=\frac{z}{c}\left[1-\frac{x^2}{r^2\left[\frac{z}{c}\left(\frac{a}{r}-1\right)+1\right]^2}\right]^{\frac{1}{2}} \ldots\ldots\ldots \tag{e}$$

which is the equation sought.

If in (*e*) $a=b=r$ then $cy=z\sqrt{(r^2-x^2)}$ which is the equation of Wallis' cono-cuneus, having a circular base and an edge equal to the diameter of the base. If in (*e*) $r = 0$ then we have

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}=0$$

which is the equation of an elliptic cone.